APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/873,829	05/09/2002	Yongwon Choi	600-1-200NCIP2	6562

28977   7590   09/30/2004

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EXAMINER
ANDRES, JANET L

ART UNIT	PAPER NUMBER
1646	

DATE MAILED: 09/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

		Application No.	Applicant(s)
Office Action Summary		09/873,829	CHOI ET AL.
		Examiner	Art Unit
		Janet L. Andres	1646

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>06 July 2004</u>.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-84</u> is/are pending in the application.
    4a) Of the above claim(s) <u>9-15,26,28-36 and 38-86</u> is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) <u>1-8,16-25,27 and 37</u> is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on <u>4 June 2001</u> is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date <u>6/02</u>.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☒ Other: *sequence alignments*.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of group I, polynucleotides, in the reply filed on 6 July 2004 is acknowledged. Claims 1-84 are pending in this application. Claims 9-15, 26, 28-36, and 38-86 are withdrawn from consideration as being drawn to a non-elected invention.

Claim Objections

Claims 25, 27, and 37 are objected to as encompassing non-elected subject matter.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 22 and 23 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. These claims encompass mammalian cells with no requirement that they be isolated and thus encompass the host cell as it occurs in nature, for example, as a gene therapy patient. Since Applicants do not intend to claim a naturally occurring products amendment of the claims to show the hand of man would obviate this rejection. It is suggested that the claims be amended to recite " an isolated mammalian host cell ..."

Claim Rejections - 35 USC § 112

Claim 37 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The factors to be considered have been summarized as the quantity of experimentation necessary, the amount of direction or guidance presented, the presence or absence of working examples, the nature of the invention, the state of the prior art, the relative skill of those in the art, the predictability or unpredictability of the art and the breadth of the claims. *Ex Parte Forman,* (230 USPQ 546 (Bd Pat. App. & Int. 1986)); *In re Wands,* 858 F.2d 731, 8 USPQ 2d 1400 (Fed. Cir. 1988).

This claim is drawn to a pharmaceutical composition and thus implies a therapeutic use. The specification, however, describes only general, potential effects of such a composition on p. 70. There is insufficient guidance to indicate that any biological effect could be obtained, or any disease treated, using an antagonist to TRANCE. Although the specification outlines art-recognized compositions and techniques, this is not adequate guidance as to how TRANCE inhibition could be used therapeutically, but is merely an invitation to the artisan to use the current invention as a starting point for further experimentation. Furthermore, antisense therapy is unreliable and dependent on the particular gene and particular antisense molecules used. Thus, without further guidance, it would require undue experimentation for the artisan to use antisense molecules as pharmaceutical agents.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2, 3, 5-8, and 16-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2, 3, 5-8, and 16-21 encompass molecules identified by "standard hybridization conditions". No such conditions are defined in the specification; the description on pp. 39-40 does not exclude any conditions. One of skill in the art would therefore be unable to determine what conditions and thus what molecules Applicant intended the claims to encompass.

Claims 3 and 6 are also indefinite because a molecule that hybridizes to an encoding sequence will not itself encode the same protein.

Claims 22 and 23 are indefinite in the recitation of "TRANCE". There is no definition of "TRANCE"; the specification on p. 4 refers to sequences that are included but includes also analogs and derivatives, with no limitation as to their structure or function. Thus the artisan would not be able to determine what proteins, and thus what polynucleotides, Applicant intended the claims to encompass.

Claims 6 and 24 are indefinite in the recitation of "conservative variant", "analog", and "derivative". None of these terms are defined in the specification so as to require any particular structure or function; nothing is excluded by Applicant's descriptions on pp. 34 and 50. Thus the artisan would not know what molecules Applicant intended the claims to encompass.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-8 and 16-23 are rejected under 35 U.S.C. 102(a) as being anticipated by Anderson et al., Nature, 1997, vol. 390, pp. 175-179. Anderson et al. teaches a sequence comprising SEQ ID NO: 2 with a single mismatch and teaches the sequence of SEQ ID NO: 4 with a single mismatch in figure 2a, p. 177. The polynucleotides encoding these sequences were provided to GenBank; see footnote and attached sequences. These polynucleotides are thus degenerate variants of SEQ ID Nos 1 and 3 according to Applicant's description on pp. 5-6. Detectable hybridizing molecules were used in figure 2b. Protein expression is taught on p. 179.

Claims 1-8, 16-25, 27, and 37 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. patent 6,242,213.

The '213 patent teaches SEQ ID NO 11, which is a truncated version of SEQ ID NO: 4, with a single mismatch, and SEQ ID NO: 13, which comprises SEQ ID NO: 2 with a single mismatch. Sequences encoding them, which are thus degenerate variants of Applicant's SEQ ID Nos 1 and 3, are taught in SEQ ID NOs 10 and 12. Expression is taught in column 10-14. Detectable hybridizing molecules are taught in column 9, lines 27-59. Modified antisense molecules are taught by reference to Cohen et al. in column 9, line 58.

Claims 4-8, 18-25, 27, and 37 rejected under 35 U.S.C. 102(e) as being anticipated by U.S. patent 5,843,678.

The '678 patent teaches SEQ ID NO: 6, which encodes SEQ ID NO: 7, which is identical to instant SEQ ID NO: 4. See sequence alignment attached. Expression is taught in column 5. Detectable hybridizing molecules are taught in column 4. Antisense therapy is taught in column 8.

NO CLAIM IS ALLOWED.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Janet L. Andres whose telephone number is 571-272-0867. The

examiner can normally be reached on Monday, Tuesday, Thursday, Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Brenda Brumback can be reached on 571-272-0961. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Janet L. Andres, Ph.D.
21 September 2004

JANET ANDRES
PRIMARY EXAMINER

encodes
#2

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LOCUS        AF019047               2201 bp    mRNA    linear   PRI 22-NOV-1997
DEFINITION   Homo sapiens receptor activator of nuclear factor kappa B ligand
             (RANKL) mRNA, complete cds.
ACCESSION    AF019047
VERSION      AF019047.1  GI:2612921
KEYWORDS     .
SOURCE       Homo sapiens (human)
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REFERENCE    1  (bases 1 to 2201)
  AUTHORS    Anderson,D.M., Maraskovsky,E., Billingsley,W.L., Dougall,W.C.,
             Tometsko,M.E., Roux,E.R., Teepe,M.C., DuBose,R.F., Cosman,D. and
             Galibert,L.
  TITLE      A homologue of the TNF receptor and its ligand enhance T-cell
             growth and dendritic-cell function
  JOURNAL    Nature 390 (6656), 175-179 (1997)
  MEDLINE    98032977
   PUBMED    9367155
REFERENCE    2  (bases 1 to 2201)
  AUTHORS    Anderson,D.M., Billingsley,W., Dougall,W., Maraskovsky,E.,
             Cosman,D., DuBose,R. and Galibert,L.
  TITLE      Direct Submission
  JOURNAL    Submitted (13-AUG-1997) Molecular Biology, Immunex Corp., 51
             University St., Seattle, WA 98101, USA
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                     NICFRHHETSGDLATEYLQLMVYVTKSIKIPSSHTLMKGGSTKYWSGNSEFHFYSIN
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ORIGIN
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Qy   121 CCTGATTCATGTAGGAGAATTAAACAGGCCTTTCAAGGAGCTGTGCAAAAGGAATTACAA 180
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Qy   241 GATCTGGCCAAGAGGAGCAAGCTTGAAGCTCAGCCTTTTGCTCATCTCACTATTAATGCC 300
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Qy   361 TGGGGTAAGATCTCCAACATGACTTTTAGCAATGGAAAACTAATAGTTAATCAGGATGGC 420
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Qy   601 TATTCCATAAACGTTGGTGGATTTTTTAAGTTACGGTCTGGAGAGGAAATCAGCATCGAG 660
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Db    2143 TTTTTGGTACAAAAAT 2158
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encodes

 # 4

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DEFINITION   Mus musculus receptor activator of nuclear factor kappa B ligand
             (RANKL) mRNA, complete cds.
ACCESSION    AF019048
VERSION      AF019048.1  GI:2612923
KEYWORDS     .
SOURCE       Mus musculus (house mouse)
  ORGANISM   Mus musculus
             Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
             Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
REFERENCE    1  (bases 1 to 2225)
  AUTHORS    Anderson,D.M., Maraskovsky,E., Billingsley,W.L., Dougall,W.C.,
             Tometsko,M.E., Roux,E.R., Teepe,M.C., DuBose,R.F., Cosman,D. and
             Galibert,L.
  TITLE      A homologue of the TNF receptor and its ligand enhance T-cell
             growth and dendritic-cell function
  JOURNAL    Nature 390 (6656), 175-179 (1997)
  MEDLINE    98032977
   PUBMED    9367155
REFERENCE    2  (bases 1 to 2225)
  AUTHORS    Anderson,D.M., Billingsley,W., Dougall,W., Maraskovsky,E.,
             Cosman,D., DuBose,R. and Galibert,L.
  TITLE      Direct Submission
  JOURNAL    Submitted (13-AUG-1997) Molecular Biology, Immunex Corp., 51
             University St., Seattle, WA 98101, USA
FEATURES             Location/Qualifiers
     source          1. .2225
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                     AQPFAHLTINAASIPSGSHKVTLSSWYHDRGWAKISNMTLSNGKLRVNQDGFYYLYAN
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                     GGFFKLRAGEEISIQVSNPSLLDPDQDATYFGAFKVQDID"
ORIGIN
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   Query Match              94.8%;  Score 2121.4;  DB 10;  Length 2225;
   Best Local Similarity    98.8%;  Pred. No. 0;
   Matches 2201;  Conservative    0;  Mismatches   16;  Indels   10;  Gaps      6;


Qy        10 CGGGGAGCCACTGCCAGGACCTTTGTGAACCGGTCGGGGCGGGGGCCGTGGC----GGAG 65
             |||||||||||||||||||||||| |||||||||||||||||||||||||||    ||||
Db         1 CGGGGAGCCACTGCCAGGACCTCTGTGAACCGGTCGGGGCGGGGGCCGCCTGGCCGGGAG 60


Qy        66 TCTGCTCGGCGGTGGGTGGCCCGAGAAGGGAGAGAACGATCGCGGAGCAGGGCGCCCGAA 125
             |||||||||||||||||||||||||  ||||||||||||||||||||||||||||||||||
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Db      61 TCTGCTCGGCGGTGGGTGGCCGAGGAAGGGAGAGAACGATCGCGGAGCAGGGCGCCCGAA 120

Qy     126 CTCCGGGCGCCGCGCCATGCGCCGGGCCAGCCGAGACTACGGCAAGTACCTGCGCAGCTC 185
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     121 CTCCGGGCGCCGCGCCATGCGCCGGGCCAGCCGAGACTACGGCAAGTACCTGCGCAGCTC 180

Qy     186 GGAAGAGATGGGCAGCGGCCCCGGCGTCCCACACGAAGGTCCGCTGCACCCCGCGCCTTC 245
           ||| ||||||||||||||||||||||||||||||||||| ||||||||||||||||||||
Db     181 GGAGGAGATGGGCAGCGGCCCCGGCGTCCCACACGAGGGTCCGCTGCACCCCGCGCCTTC 240

Qy     246 TGCACCGGCTCCGGCGCCGCCACCCGCCGCCTCCCGCTCCATGTTCCTGGCCCTCCTGGG 305
           |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     241 TGCACCGGCTCCGGCGCCGCCACCCGCCGCCTCCCGCTCCATGTTCCTGGCCCTCCTGGG 300

Qy     306 GCTGGGACTGGGCCAGGTGGTCTGCAGCATCGCTCTGTTCCTGTACTTTCGAGCGCAGAT 365
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     301 GCTGGGACTGGGCCAGGTGGTCTGCAGCATCGCTCTGTTCCTGTACTTTCGAGCGCAGAT 360

Qy     366 GGATCCTAACAGAATATCAGAAGACAGCACTCACTGCTTTTATAGAATCCTGAGACTCCA 425
           |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     361 GGATCCTAACAGAATATCAGAAGACAGCACTCACTGCTTTTATAGAATCCTGAGACTCCA 420

Qy     426 TGAAAACGCAGGTTTGCAGGACTCGACTCTGGAGAGTGAAGACACACTACCTGACTCCTG 485
           |||||||||||| ||||||||||||||||||||||||||||||||||||||||||||||||
Db     421 TGAAAACGCAGATTTGCAGGACTCGACTCTGGAGAGTGAAGACACACTACCTGACTCCTG 480

Qy     486 CAGGAGGATGAAACAAGCCTTTCAGGGGGCCGTGCAGAAGGAACTGCAACACATTGTGGG 545
           |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     481 CAGGAGGATGAAACAAGCCTTTCAGGGGGCCGTGCAGAAGGAACTGCAACACATTGTGGG 540

Qy     546 GCCACAGCGCTTCTCAGGAGCTCCAGCTATGATGGAAGGCTCATGGTTGGATGTGGCCCA 605
           |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     541 GCCACAGCGCTTCTCAGGAGCTCCAGCTATGATGGAAGGCTCATGGTTGGATGTGGCCCA 600

Qy     606 GCGAGGCAAGCCTGAGGCCCAGCCATTTGCACACCTCACCATCAATGCTGCCAGCATCCC 665
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     601 GCGAGGCAAGCCTGAGGCCCAGCCATTTGCACACCTCACCATCAATGCTGCCAGCATCCC 660

Qy     666 ATCGGGTTCCCATAAAGTCACTCTGTCCTCTTGGTACCACGATCGAGGCTGGGCCAAGAT 725
           |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     661 ATCGGGTTCCCATAAAGTCACTCTGTCCTCTTGGTACCACGATCGAGGCTGGGCCAAGAT 720

Qy     726 CTCTAACATGACGTTAAGCAACGGAAAACTAAGGGTTAACCAAGATGGCTTCTATTACCT 785
           |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     721 CTCTAACATGACGTTAAGCAACGGAAAACTAAGGGTTAACCAAGATGGCTTCTATTACCT 780

Qy     786 GTACGCCAACATTTGCTTTCGGCATCATGAAACATCGGGAAGCGTACCTACAGACTATCT 845
           |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     781 GTACGCCAACATTTGCTTTCGGCATCATGAAACATCGGGAAGCGTACCTACAGACTATCT 840

Qy     846 TCAGCTGATGGTGTATGTCGTTAAAACCAGCATCAAAATCCCAAGTTCTCATAACCTGAT 905
           |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     841 TCAGCTGATGGTGTATGTCGTTAAAACCAGCATCAAAATCCCAAGTTCTCATAACCTGAT 900

Qy     906 GAAAGGAGGGAGCACGAAAAACTGGTCGGGCAATTCTGAATTCCACTTTTATTCCATAAA 965
           |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     901 GAAAGGAGGGAGCACGAAAAACTGGTCGGGCAATTCTGAATTCCACTTTTATTCCATAAA 960
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Qy    966  TGTTGGGGGATTTTTCAAGCTCCGAGCTGGTGAAGAAATTAGCATTCAGGTGTCCAACCC  1025
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    961  TGTTGGGGGATTTTTCAAGCTCCGAGCTGGTGAAGAAATTAGCATTCAGGTGTCCAACCC  1020

Qy   1026  TTCCCTGCTGGATCCGGATCAAGATGCGACGTACTTTGGGGCTTTCAAAGTTCAGGACAT  1085
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1021  TTCCCTGCTGGATCCGGATCAAGATGCGACGTACTTTGGGGCTTTCAAAGTTCAGGACAT  1080

Qy   1086  AGACTGAGACTCATTTCGTGGAACATTAGCATGGATGTCCTAGATGTTTGGAAACTTCTT  1145
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1081  AGACTGAGACTCATTTCGTGGAACATTAGCATGGATGTCCTAGATGTTTGGAAACTTCTT  1140

Qy   1146  AAAAAATGGATGATGTCTATACATGTGTAAGACTACTAAGAGACATGGCCCACGGTGTAT  1205
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1141  AAAAAATGGATGATGTCTATACATGTGTAAGACTACTAAGAGACATGGCCCACGGTGTAT  1200

Qy   1206  GAAACTCACAGCCCTCTCTCTTGAGCCCTGTACAGGTTGTGTATATGTAAAGTCCATAGG  1265
           ||||||||||||||||||||||||| ||||||||||||||||||||||||||||||||||
Db   1201  GAAACTCACAGCCCTCTCTCTTGAG-CCTGTACAGGTTGTGTATATGTAAAGTCCATAGG  1259

Qy   1266  TGATGTTAGATTCATGGTGATTACACAACGGTTTTACAATTTTGTAATGATTTCCTAGAA  1325
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1260  TGATGTTAGATTCATGGTGATTACACAACGGTTTTACAATTTTGTAATGATTTCCTAGAA  1319

Qy   1326  TTGAACCAGATTGGGAGAGGTATTCCGATGCTTATGAAAAACTTACACGTGAGCTATGGA  1385
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Db   1320  TTGAACCAGATTGGGAGAGGTATTCCGATGCTTATGAAAAACTTACACGTGAGCTATGGA  1379

Qy   1386  AGGGGGTCACAGTCTCT-GGTCTAACCCCTGGACATGTGCCACTGAGAACCTTGAAATTA  1444
           |||||||||||||||| |||||||||||||||||||||||||||||||||||||||||||
Db   1380  AGGGGGTCACAGTCTCTGGGTCTAACCCCTGGACATGTGCCACTGAGAACCTTGAAATTA  1439

Qy   1445  AGAGGATGCCATGTCATTGCATAGAAATGATAGTGTGAAGGGTTAAGTTCTTTTGAATTG  1504
           |||||||||||||||||||||| |||||||||||||||||||||||||||||||||||||
Db   1440  AGAGGATGCCATGTCATTGCAAAGAAATGATAGTGTGAAGGGTTAAGTTCTTTTGAATTG  1499

Qy   1505  TTACATTGCGCTGGGACCTGCAAATAAGTTCTTTTTTTCTAATGAG--GAGAAAAATATA  1562
           ||||||||||||||||||||||||||||||||||||||||||||||  ||||||||||||
Db   1500  TTACATTGCGCTGGGACCTGCAAATAAGTTCTTTTTTTCTAATGAGGAGAGAAAAATATA  1559

Qy   1563  TGTATTTTTATATAATGTCTAAAGTTATATTTCAGGTGTAATGTTTTCTGTGCAAAGTTT  1622
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1560  TGTATTTTTATATAATGTCTAAAGTTATATTTCAGGTGTAATGTTTTCTGTGCAAAGTTT  1619

Qy   1623  TGTAAATTATATTTGTGCTATAGTATTTGATTCAAAATATTTAAAAATGTCTCACTGTTG  1682
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1620  TGTAAATTATATTTGTGCTATAGTATTTGATTCAAAATATTTAAAAATGTCTCACTGTTG  1679

Qy   1683  ACATATTTAATGTTTTAAATGTACAGATGTATTTAACTGGTGCACTTTGTAATTCCCCTG  1742
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1680  ACATATTTAATGTTTTAAATGTACAGATGTATTTAACTGGTGCACTTTGTAATTCCCCTG  1739

Qy   1743  AAGGTACTCGTAGCTAAGGGGGCAGAATACTGTTTCTGGTGACCACATGTAGTTTATTTC  1802
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1740  AAGGTACTCGTAGCTAAGGGGGCAGAATACTGTTTCTGGTGACCACATGTAGTTTATTTC  1799
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Qy    1803  TTTATTCTTTTTAACTTAATAGAGTCTTCAGACTTGTCAAAACTATGCAAGCAAAATAAA  1862
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1800  TTTATTCTTTTTAACTTAATAGAGTCTTCAGACTTGTCAAAACTATGCAAGCAAAATAAA  1859

Qy    1863  TAAATAAAAATAAAATGAATACCTTGAATAATAAGTAGGATGTTGGTCACCAGGTGCCTT  1922
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1860  TAAATAAAAATAAAATGAATACCTTGAATAATAAGTAGGATGTTGGTCACCAGGTGCCTT  1919

Qy    1923  TCAAATTTAGAAGCTAATTGACTTTAGGAGCTGACATAGCCAAAAAGGA-ACATAATAGG  1981
            |||||||||||||||||||||||||||||||||||||||||||||||| |||||||||||
Db    1920  TCAAATTTAGAAGCTAATTGACTTTAGGAGCTGACATAGCCAAAAAGGATACATAATAGG  1979

Qy    1982  CTACTGAAATCTGTCAGGAGTATTTATGCAATTATTGAACAGGTGTCTTTTTTTACAAGA  2041
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1980  CTACTGAAATCTGTCAGGAGTATTTATGCAATTATTGAACAGGTGTCTTTTTTTACAAGA  2039

Qy    2042  GCTACAAATTGTAAATTTTGGTTTCTTTTTTTTCCCATAGAAAATGTACTATAGTTTATC  2101
            |||||||||||||||||||| |||||||||||||||||||||||||||||||||||||||
Db    2040  GCTACAAATTGTAAATTTT-GTTTCTTTTTTTTCCCATAGAAAATGTACTATAGTTTATC  2098

Qy    2102  AGCCAAAAAACAATCCACTTTTTAATTTAGTGAAAGTTATTTTATTATACTGTACAATAA  2161
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    2099  AGCCAAAAAACAATCCACTTTTTAATTTAGTGAAAGTTATTTTATTATACTGTACAATAA  2158

Qy    2162  AAGCATTGTCTCTGAATGTTAATTTTTTGGTACAAAAAATAAATTTGTACGAAAAAAAAA  2221
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||    |
Db    2159  AAGCATTGTCTCTGAATGTTAATTTTTTGGTACAAAAAATAAATTTGTACGAAAACCTGA  2218

Qy    2222  AAAAAAA  2228
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Db    2219  AAAAAAA  2225
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AR062119

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LOCUS       AR062119                2295 bp    DNA     linear   PAT 29-SEP-1999
DEFINITION  Sequence 6 from patent US 5843678.
ACCESSION   AR062119
VERSION     AR062119.1  GI:5989810
KEYWORDS    .
SOURCE      Unknown.
  ORGANISM  Unknown.
            Unclassified.
REFERENCE   1  (bases 1 to 2295)
  AUTHORS   Boyle,W.J.
  TITLE     Osteoprotegerin binding proteins
  JOURNAL   Patent: US 5843678-A 6 01-DEC-1998;
FEATURES             Location/Qualifiers
     source          1. .2295
                     /organism="unknown"
                     /mol_type="unassigned DNA"
ORIGIN
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  Query Match            94.8%;   Score 2120.4;  DB 6;   Length 2295;
  Best Local Similarity  98.8%;   Pred. No. 0;
  Matches 2200;  Conservative    0;  Mismatches   16;  Indels   10;  Gaps    6;


Qy         20 CTGCCAGGACCTTTGTGAACCGGTCGGGGCGGGGGCCGTGGC----GGAGTCTGCTCGGC 75
              | |||||||||| |||||||||||||||||||||||||||||      ||||||||||||
Db         32 CGGCCAGGACCTCTGTGAACCGGTCGGGGCGGGGGCCGCCTGGCCGGGAGTCTGCTCGGC 91


Qy         76 GGTGGGTGGCCCGAGAAGGGAGAGAACGATCGCGGAGCAGGGCGCCCGAACTCCGGGCGC 135
              ||||||||||| |||||||||||||||||||||||||||||||||||||||||||||||||
Db         92 GGTGGGTGGCCCGAGGAAGGGAGAGAACGATCGCGGAGCAGGGCGCCCGAACTCCGGGCGC 151


Qy        136 CGCGCCATGCGCCGGGCCAGCCGAGACTACGGCAAGTACCTGCGCAGCTCGGAAGAGATG 195
              |||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db        152 CGCGCCATGCGCCGGGCCAGCCGAGACTACGGCAAGTACCTGCGCAGCTCGGAGGAGATG 211


Qy        196 GGCAGCGGCCCCGGCGTCCCACACGAAGGTCCGCTGCACCCCGCGCCTTCTGCACCGGCT 255
              |||||||||||||||||||||||||||| |||||||||||||||||||||||||||||||||
Db        212 GGCAGCGGCCCCGGCGTCCCACACGAGGGTCCGCTGCACCCCGCGCCTTCTGCACCGGCT 271


Qy        256 CCGGCGCCGCCACCCGCCGCCTCCCGCTCCATGTTCCTGGCCCTCCTGGGGCTGGGACTG 315
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        272 CCGGCGCCGCCACCCGCCGCCTCCCGCTCCATGTTCCTGGCCCTCCTGGGGCTGGGACTG 331


Qy        316 GGCCAGGTGGTCTGCAGCATCGCTCTGTTCCTGTACTTTCGAGCGCAGATGGATCCTAAC 375
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        332 GGCCAGGTGGTCTGCAGCATCGCTCTGTTCCTGTACTTTCGAGCGCAGATGGATCCTAAC 391


Qy        376 AGAATATCAGAAGACAGCACTCACTGCTTTTATAGAATCCTGAGACTCCATGAAAACGCA 435
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        392 AGAATATCAGAAGACAGCACTCACTGCTTTTATAGAATCCTGAGACTCCATGAAAACGCA 451


Qy        436 GGTTTGCAGGACTCGACTCTGGAGAGTGAAGACACACTACCTGACTCCTGCAGGAGGATG 495
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        452 GGTTTGCAGGACTCGACTCTGGAGAGTGAAGACACACTACCTGACTCCTGCAGGAGGATG 511


Qy        496 AAACAAGCCTTTCAGGGGGCCGTGCAGAAGGAACTGCAACACATTGTGGGGCCACAGCGC 555
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
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Db    512  AAACAAGCCTTTCAGGGGGCCGTGCAGAAGGAACTGCAACACATTGTGGGGCCACAGCGC 571

Qy    556  TTCTCAGGAGCTCCAGCTATGATGGAAGGCTCATGGTTGGATGTGGCCCAGCGAGGCAAG 615
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    572  TTCTCAGGAGCTCCAGCTATGATGGAAGGCTCATGGTTGGATGTGGCCCAGCGAGGCAAG 631

Qy    616  CCTGAGGCCCAGCCATTTGCACACCTCACCATCAATGCTGCCAGCATCCCATCGGGTTCC 675
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    632  CCTGAGGCCCAGCCATTTGCACACCTCACCATCAATGCTGCCAGCATCCCATCGGGTTCC 691

Qy    676  CATAAAGTCACTCTGTCCTCTTGGTACCACGATCGAGGCTGGGCCAAGATCTCTAACATG 735
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    692  CATAAAGTCACTCTGTCCTCTTGGTACCACGATCGAGGCTGGGCCAAGATCTCTAACATG 751

Qy    736  ACGTTAAGCAACGGAAAACTAAGGGTTAACCAAGATGGCTTCTATTACCTGTACGCCAAC 795
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Db    752  ACGTTAAGCAACGGAAAACTAAGGGTTAACCAAGATGGCTTCTATTACCTGTACGCCAAC 811

Qy    796  ATTTGCTTTCGGCATCATGAAACATCGGGAAGCGTACCTACAGACTATCTTCAGCTGATG 855
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    812  ATTTGCTTTCGGCATCATGAAACATCGGGAAGCGTACCTACAGACTATCTTCAGCTGATG 871

Qy    856  GTGTATGTCGTTAAAACCAGCATCAAAATCCCAAGTTCTCATAACCTGATGAAAGGAGGG 915
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    872  GTGTATGTCGTTAAAACCAGCATCAAAATCCCAAGTTCTCATAACCTGATGAAAGGAGGG 931

Qy    916  AGCACGAAAAACTGGTCGGGCAATTCTGAATTCCACTTTTATTCCATAAATGTTGGGGGA 975
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    932  AGCACGAAAAACTGGTCGGGCAATTCTGAATTCCACTTTTATTCCATAAATGTTGGGGGA 991

Qy    976  TTTTTCAAGCTCCGAGCTGGTGAAGAAATTAGCATTCAGGTGTCCAACCCTTCCCTGCTG 1035
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    992  TTTTTCAAGCTCCGAGCTGGTGAAGAAATTAGCATTCAGGTGTCCAACCCTTCCCTGCTG 1051

Qy    1036 GATCCGGATCAAGATGCGACGTACTTTGGGGCTTTCAAAGTTCAGGACATAGACTGAGAC 1095
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1052 GATCCGGATCAAGATGCGACGTACTTTGGGGCTTTCAAAGTTCAGGACATAGACTGAGAC 1111

Qy    1096 TCATTTCGTGGAACATTAGCATGGATGTCCTAGATGTTTGGAAACTTCTTAAAAAATGGA 1155
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1112 TCATTTCGTGGAACATTAGCATGGATGTCCTAGATGTTTGGAAACTTCTTAAAAAATGGA 1171

Qy    1156 TGATGTCTATACATGTGTAAGACTACTAAGAGACATGGCCCACGGTGTATGAAACTCACA 1215
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Db    1172 TGATGTCTATACATGTGTAAGACTACTAAGAGACATGGCCCACGGTGTATGAAACTCACA 1231

Qy    1216 GCCCTCTCTCTTGAGCCCTGTACAGGTTGTGTATATGTAAAGTCCATAGGTGATGTTAGA 1275
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Db    1232 GCCCTCTCTCTTGAG-CCTGTACAGGTTGTGTATATGTAAAGTCCATAGGTGATGTTAGA 1290

Qy    1276 TTCATGGTGATTACACAACGGTTTTACAATTTTGTAATGATTTCCTAGAATTGAACCAGA 1335
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1291 TTCATGGTGATTACACAACGGTTTTACAATTTTGTAATGATTTCCTAGAATTGAACCAGA 1350

Qy    1336 TTGGGAGAGGTATTCCGATGCTTATGAAAAACTTACACGTGAGCTATGGAAGGGGGTCAC 1395
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Db    1351 TTGGGAGAGGTATTCCGATGCTTATGAAAAACTTACACGTGAGCTATGGAAGGGGGTCAC 1410
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Qy    1396 AGTCTCT-GGTCTAACCCCTGGACATGTGCCACTGAGAACCTTGAAATTAAGAGGATGCC 1454
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Db    1411 AGTCTCTGGGTCTAACCCCTGGACATGTGCCACTGAGAACCTTGAAATTAAGAGGATGCC 1470

Qy    1455 ATGTCATTGCATAGAAATGATAGTGTGAAGGGTTAAGTTCTTTTGAATTGTTACATTGCG 1514
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Qy    1515 CTGGGACCTGCAAATAAGTTCTTTTTTTTCTAATGAG--GAGAAAAATATATGTATTTTTA 1572
           ||||||||||||||||||||||||||||||||||||||| ||||||||||||||||||||||
Db    1531 CTGGGACCTGCAAATAAGTTCTTTTTTTTCTAATGAGGAGAGAAAAATATATGTATTTTTA 1590

Qy    1573 TATAATGTCTAAAGTTATATTTCAGGTGTAATGTTTTCTGTGCAAAGTTTTGTAAATTAT 1632
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Db    1591 TATAATGTCTAAAGTTATATTTCAGGTGTAATGTTTTCTGTGCAAAGTTTTGTAAATTAT 1650

Qy    1633 ATTTGTGCTATAGTATTTGATTCAAAATATTTAAAAATGTCTCACTGTTGACATATTTAA 1692
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Db    1651 ATTTGTGCTATAGTATTTGATTCAAAATATTTAAAAATGTCTCACTGTTGACATATTTAA 1710

Qy    1693 TGTTTTAAATGTACAGATGTATTTAACTGGTGCACTTTGTAATTCCCCTGAAGGTACTCG 1752
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Db    1711 TGTTTTAAATGTACAGATGTATTTAACTGGTGCACTTTGTAATTCCCCTGAAGGTACTCG 1770

Qy    1753 TAGCTAAGGGGGCAGAATACTGTTTCTGGTGACCACATGTAGTTTATTTCTTTATTCTTT 1812
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Db    1771 TAGCTAAGGGGGCAGAATACTGTTTCTGGTGACCACATGTAGTTTATTTCTTTATTCTTT 1830

Qy    1813 TTAACTTAATAGAGTCTTCAGACTTGTCAAAACTATGCAAGCAAAATAAATAAATAAAAA 1872
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Db    1831 TTAACTTAATAGAGTCTTCAGACTTGTCAAAACTATGCAAGCAAAATAAATAAATAAAAA 1890

Qy    1873 TAAAATGAATACCTTGAATAATAAGTAGGATGTTGGTCACCAGGTGCCTTTCAAATTTAG 1932
           |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1891 TAAAATGAATACCTTGAATAATAAGTAGGATGTTGGTCACCAGGTGCCTTTCAAATTTAG 1950

Qy    1933 AAGCTAATTGACTTTAGGAGCTGACATAGCCAAAAAGGA-ACATAATAGGCTACTGAAAT 1991
           |||||||||||||||||||||||||||||||||||||||| |||||||||||||||||||
Db    1951 AAGCTAATTGACTTTAGGAGCTGACATAGCCAAAAAGGATACATAATAGGCTACTGAAAT 2010

Qy    1992 CTGTCAGGAGTATTTATGCAATTATTGAACAGGTGTCTTTTTTTACAAGAGCTACAAATT 2051
           |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    2011 CTGTCAGGAGTATTTATGCAATTATTGAACAGGTGTCTTTTTTTACAAGAGCTACAAATT 2070

Qy    2052 GTAAATTTTGGTTTCTTTTTTTTCCCATAGAAATGTACTATAGTTTATCAGCCAAAAAA 2111
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Db    2071 GTAAATTTT-GTTTCTTTTTTTTTCCCATAGAAATGTACTATAGTTTATCAGCCAAAAAA 2129

Qy    2112 CAATCCACTTTTTAATTTAGTGAAAGTTATTTTATTATACTGTACAATAAAAGCATTGTC 2171
           |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    2130 CAATCCACTTTTTAATTTAGTGAAAGTTATTTTATTATACTGTACAATAAAAGCATTGTC 2189

Qy    2172 TCTGAATGTTAATTTTTTGGTACAAAAAATAAATTTGTACGAAAAAAAAAAAAAAAAAA 2231
           ||||||||||||||||||||||||||||||||||||||||||||||||| |||||||||||
Db    2190 TCTGAATGTTAATTTTTTGGTACAAAAAATAAATTTGTACGAAAACCTGAAAAAAAAAAA 2249
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Qy      2232  AAAAAA  2237
              ||||||
Db      2250  AAAAAA  2255
```

Query Match   100.0%; Score 1675; DB 2; Length 316;
Best Local Similarity   100.0%; Pred. No. 8.4e-157;
Matches 316; Conservative   0; Mismatches   0; Indels   0; Gaps   0;

```
Qy     1 MRRASRDYGKYLRSSEEMGSGPGVPHEGPLHPAPSAPAPAPPPAASRSMFLALLGLGLGQ 60
         |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     1 MRRASRDYGKYLRSSEEMGSGPGVPHEGPLHPAPSAPAPAPPPAASRSMFLALLGLGLGQ 60

Qy    61 VVCSIALFLYFRAQMDPNRISEDSTHCFYRILRLHENAGLQDSTLESEDTLPDSCRRMKQ 120
         |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    61 VVCSIALFLYFRAQMDPNRISEDSTHCFYRILRLHENAGLQDSTLESEDTLPDSCRRMKQ 120

Qy   121 AFQGAVQKELQHIVGPQRFSGAPAMMEGSWLDVAQRGKPEAQPFAHLTINAASIPSGSHK 180
         |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   121 AFQGAVQKELQHIVGPQRFSGAPAMMEGSWLDVAQRGKPEAQPFAHLTINAASIPSGSHK 180

Qy   181 VTLSSWYHDRGWAKISNMTLSNGKLRVNQDGFYYLYANICFRHHETSGSVPTDYLQLMVY 240
         |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   181 VTLSSWYHDRGWAKISNMTLSNGKLRVNQDGFYYLYANICFRHHETSGSVPTDYLQLMVY 240

Qy   241 VVKTSIKIPSSHNLMKGGSTKNWSGNSEFHFYSINVGGFFKLRAGEEISIQVSNPSLLDP 300
         |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   241 VVKTSIKIPSSHNLMKGGSTKNWSGNSEFHFYSINVGGFFKLRAGEEISIQVSNPSLLDP 300

Qy   301 DQDATYFGAFKVQDID 316
         ||||||||||||||||
Db   301 DQDATYFGAFKVQDID 316
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